

# Connections to PAN/PAN-A Series

## 1. Control Parameters

Four different methods (PAN-1 through PAN-4 connections) can be used to make connections to the PAN/PAN-A series, depending on the control parameters.

The following parameters can be controlled.

Table 1 Control Parameters

✓ : Can be controlled No mark : Uncontrollable ✕ : Subject to certain conditions

Connection	PAN-1	PAN-2	PAN-3	PAN-4
Control board	OP01-PIA <sup>*1</sup>			OP02-PIA
Peripheral option	TU02+SH	TU02	—	—
Output voltage setting	✓	✓	✓	✓
Output current setting	✓	✓	✓	✓
Output voltage readback	✓	✓		
Output current readback (accuracy 0.3 % of full scale)	✓			
Output ON/OFF	✓	✓		✓
C.V mode monitoring	✕ <sup>*2</sup>	✕ <sup>*2</sup>		
C.C mode monitoring	✕ <sup>*2</sup>	✕ <sup>*2</sup>		
Alarm monitoring <sup>*3</sup>	✕ <sup>*2</sup>	✕ <sup>*2</sup>		

\*1. OP01-PIA cannot control models with a rated output voltage exceeding 500 V.

\*2. Installation by us of a DIN connector is required (some types are not supported).

\*3. Monitors the activation of the overvoltage protection circuit, overheat protection circuit, voltage detection circuit, and overcurrent protection circuit.

## 2. PAN-1

When the OP01-PIA and the terminal unit TU02-PIA are used together with the shunt-unit SH series. OP01-PIA cannot control models with a rated output voltage exceeding 500 V.

If parameter C.V/C.C-mode monitoring or power switch OFF monitoring are to be performed, modifying by Kikusui is necessary for installation of a DIN connector.

The application of the SH series allows readback of accurate current values (with an accuracy of 0.3 % of full scale).

To connect the OP01-PIA to the SH series, use the flat cable accompanying the OP01-PIA. To connect the SH series to the TU02-PIA, use the flat cable accompanying the SH series.

To connect the TU02-PIA to the PAN/PAN-A series, use the cable accompanying the TU02-PIA.

For the connection procedure, see the operation manual for each device.

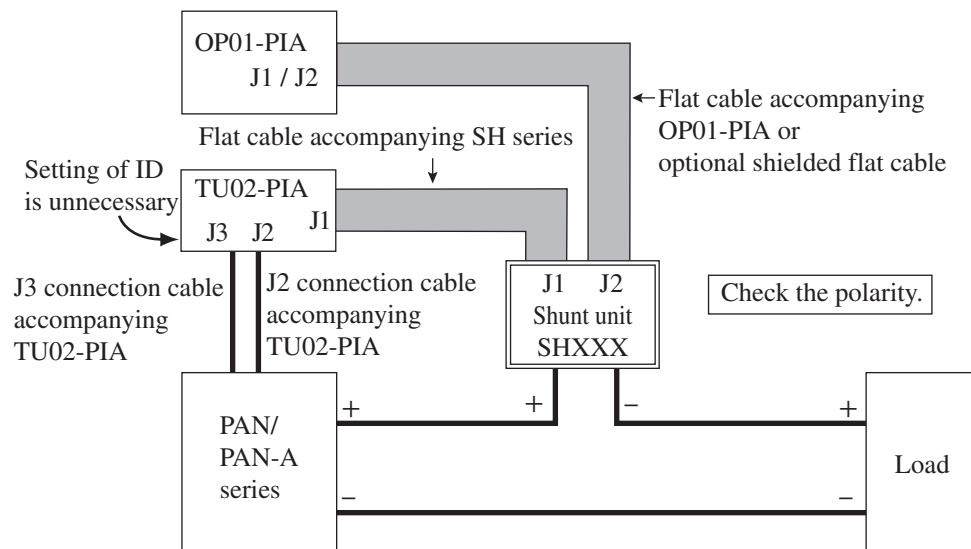


Fig.1 PAN-1 connections

### 3. PAN-2

When the OP01-PIA is used together with the terminal unit TU02-PIA, OP01-PIA cannot control models with a rated output voltage exceeding 500 V.

If parameter C.V/C.C-mode monitoring or power switch OFF monitoring are to be performed, modifying by Kikusui is necessary for installation of a DIN connector.

To connect the OP01-PIA to the TU02-PIA, use the flat cable accompanying the OP01-PIA.

To connect the TU02-PIA to the PAN/PAN-A series, use the connection cable accompanying the TU02-PIA.

For the connection procedure, see the operation manual for each device.

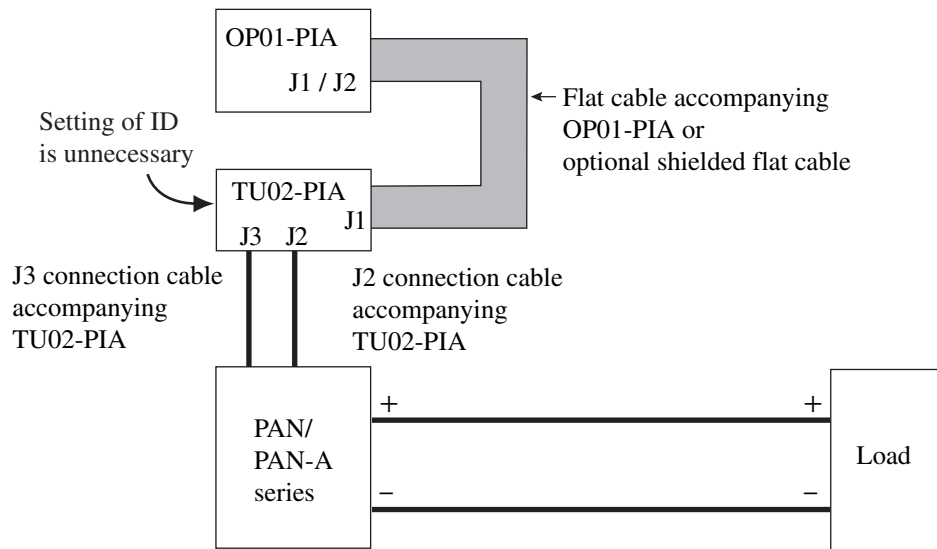


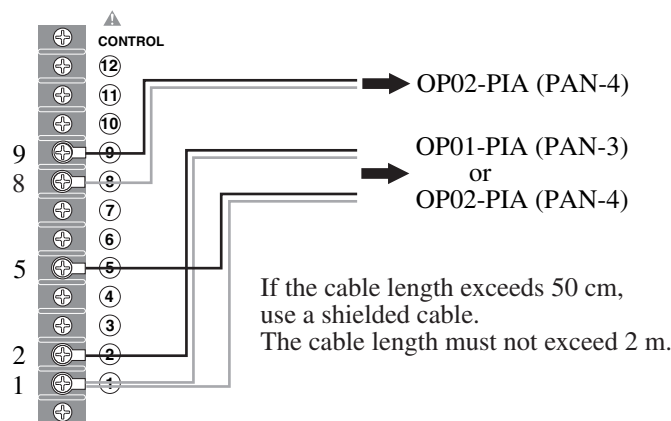
Fig.2 PAN-2 connections

## 4. PAN-3/PAN-4

In PAN-3 connections, connect J1/J2 on the OP01-PIA to the PAN/PAN-A series (on the rear of the control terminal board) in accordance with the pin layout shown below, as instructed in Chapter 8, “OP01-PIA” of PIA4800 series operation manual. OP01-PIA cannot control models with a rated output voltage exceeding 500 V.

In PAN-4 connections, connect CH1/CH2 on the OP02-PIA to the PAN/PAN-A series (on the rear of the control terminal board) in accordance with the pin layout shown below, as instructed in Chapter 9, “OP02-PIA” of PIA4800 series operation manual.

### ■ PAN Series



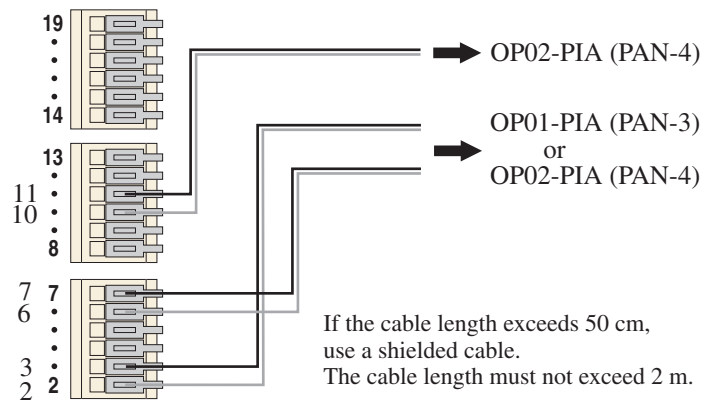
PAN series  
On the rear of the control terminal board

Fig.3 PAN-3 /PAN-4 (PAN series) connections

Table 2 Pin layout for PAN-3 /PAN-4 (PAN series)

PAN series Control terminal board	OP01-PIA J1/J2	OP02-PIA CH1/CH2	Remarks
Terminal 2	4	A	Output voltage control
Terminal 1	2	B	Common for output voltage control
Terminal 5	5	C	Output current control
Terminal 1	2	D	Common for output current control
Terminal 9	?	E	Output ON/OFF
Terminal 8	?	F	Common for output ON/OFF

## ■ PAN-A Series



PAN-A series  
On the rear of the control terminal board

Fig.4 PAN-3 /PAN-4 (PAN-A series) connections

Table 3 Pin layout for PAN-3 /PAN-4 (PAN-A series)

PAN-A series Control terminal board	OP01-PIA J1/J2	OP02-PIA CH1/CH2	Remarks
Terminal 3	4	A	Output voltage control
Terminal 2	2	B	Common for output voltage control
Terminal 7	5	C	Output current control
Terminal 6	2	D	Common for output current control
Terminal 11	?	E	Output ON/OFF
Terminal 10	?	F	Common for output ON/OFF

## 5. Preparation for Starting Control

### Settings on PAN/PAN-A unit

Before starting control operation, make the following settings:

- 1 Set switches S1 and S3 on the front control panel to the upper position (remote settings for C.C and C.V).
- 2 Turn the output setting knob clockwise until it stops.

#### NOTE

- To prevent the output setting knob from rotating, use of a guard cap is recommended. Note that the calibration value changes if the output setting knob is turned following calibration.

## Setting and checking PAN/PAN-A Model ID

The newest version of ID list can be downloaded from download service of Kikusui website (<http://www.kikusui.co.jp/en/download/>).

Table 4 ID list

ID No	Model	Output-current setting range [V]	Output-current setting range [A]	SH series	Switch setting position on <sup>*1</sup> the control board	
					100/200 <sup>*2</sup>	101/201 <sup>*2,*3</sup>
094	PAN16-10(A)	0-16.000	0-10.000	SH10	H	L/NC
095	PAN16-18(A)	0-16.000	0-18.000	SH50	H	L/NC
096	PAN16-30(A)	0-16.000	0-30.000	SH50	H	L/NC
097	PAN16-50(A)	0-16.000	0-50.00	SH50	H	L/NC
098	PAN35-5(A)	0-35.000	0-5.000	SH10	H	L/NC
099	PAN35-10(A)	0-35.000	0-10.000	SH10	H	L/NC
100	PAN35-20(A)	0-35.000	0-20.000	SH50	H	L/NC
101	PAN35-30(A)	0-35.000	0-30.000	SH50	H	L/NC
102	PAN55-3(A)	0-55.00	0-3.0000	SH10	H	L/NC
103	PAN55-6(A)	0-55.00	0-6.000	SH10	H	L/NC
104	PAN55-10(A)	0-55.00	0-10.000	SH10	H	L/NC
105	PAN55-20(A)	0-55.00	0-20.000	SH50	H	L/NC
125	PAN60-3A	0-60.00	0-3.0000	SH10	H	L/NC
126	PAN60-6A	0-60.00	0-6.000	SH10	H	L/NC
127	PAN60-10A	0-60.00	0-10.000	SH10	H	L/NC
128	PAN60-20A	0-60.00	0-20.000	SH50	H	L/NC
106	PAN70-2.5(A)	0-70.00	0-2.5000	SH10	H	L/NC
107	PAN70-5(A)	0-70.00	0-5.000	SH10	H	L/NC
108	PAN70-8(A)	0-70.00	0-8.000	SH10	H	L/NC
109	PAN70-15(A)	0-70.00	0-15.000	SH50	H	L/NC
110	PAN110-1.5(A)	0-110.00	0-1.5000	Special orders	H	L/NC
111	PAN110-3(A)	0-110.00	0-3.0000	SH10	H	L/NC
112	PAN110-5(A)	0-110.00	0-5.000	SH10	H	L/NC
113	PAN110-10(A)	0-110.00	0-10.000	SH10	H	L/NC
114	PAN160-1(A)	0-160.00	0-1.0000	Special orders	H	L/NC
115	PAN160-2(A)	0-160.00	0-2.0000	Special orders	H	L/NC
116	PAN160-3.5(A)	0-160.00	0-3.5000	SH10	H	L/NC
117	PAN160-7(A)	0-160.00	0-7.000	SH10	H	L/NC
118	PAN250-2.5(A)	0-250.00	0-2.5000	SH10	H	L/NC
119	PAN250-4.5(A)	0-250.00	0-4.500	SH10	H	L/NC
120	PAN600-2A	0-600.0	0-2.0000	—	H	L/NC
121	PAN350-3.5A	0-350.00	0-3.5000	—	H	L/NC

\*1. The setting positions for the switch of OP01-PIA or OP02-PIA.

\*2. The number "100" and "101" are applied for the switch of Channel 1, "200" and "201" are for the switch of Channel 2.

\*3. The setting positions of "L" is used for OP01-PIA, "NC" is used for OP02-PIA.

For the ID settings, see 3.4, “Configuration Software” of PIA4800 series operation manual.

## Calibrating the PAN/PAN-A series

When a new Model ID has been set, be sure to conduct calibration.

Calibration can be performed for two parameters: output voltage and output current.

For the calibration procedure, see Chapter 3, “Calibration by Device Configuration” of PIA4800 series operation manual.

## Checking PAN/PAN-A performance

Following calibration, set a voltage via GPIB or RS232C to check the performance of the PAN/PAN-A.

### Checking procedure (example)

By sending the message “NODE 1;CH 1;VSET 12.0” to the PIA4800 series, make sure the preset voltage for the PAN/PAN-A series is set at 12.0 V.

## 6. Commands

For the commands, see “Device Messages” of Connecting & Programming Guide.

